

INDEX.

ADDITIONS.

Additions to Library and Museum.
(See Library.)
— to List of Members. (See List.)
Address of Members, Changes and
Corrections of. (See List.)
ALLEN, CHARLES J.—Discussion by,
95.
ALLIS, EDWARD P.—Admitted as Fel-
low, 136, 146.
Amendments to Constitution. (See
Constitution.)
American Society of Mechanical En-
gineers, 136.
ANDERSON, THOMAS S.—Resignation
of, 156.
ANDREWS, EDWARD F.—Report by,
18.
Annual Convention. (See Conven-
tion.)
Annual Meeting, 1, 152. (See Min-
utes of Meetings.)
ANSLEY, GEORGE D.—Death announc-
ed, 148, 149.
APPLEBY, CHARLES J.—Paper by, 151.
APPLETON, THOMAS—Admitted as
Member, 79, 119.
Arrears of Dues. (See Dues.)
BAILEY, THOMAS NORTON.—Admitted
as Member, 153, 156.
Ballots for Amendments to Constitu-
tion, 60.
— for Members, 59, 63, 79, 85, 106,
135, 149, 153, 155.
— for place of Convention, 5.
BELL, ANDREW.—Admitted as Mem-
ber, 135, 145.
BENZENBERG, GEORGE H.—Admitted as
Member, 85, 89.
BISHOP, JUDSON W.—Admitted as
Member, 85, 89.—Chairman Con-
vention Committee, 92.
BISSELL, H.—Discussion by, 40.
BIXBY, WILLIAM H.—Discussion by,
60.
Blast Furnace Wool. (See Steam
Pipes.)
BLISS, HENRY I.—Admitted as Mem-
ber, 135, 145.
BLUNDEN, HENRY D.—Discussion by,
136.

BOARD.

Board of Direction.—Annual Report,
1, 43, 155.—Minutes of. (See
Minutes.)
BOGART, JOHN.—Discussion by, 7, 21,
59, 60, 67, 136.—Elected Secre-
tary and Librarian, 5.—On Com-
mittee, 154.—Opens Annual Con-
vention, 91.—Report by, 52.
BOLLER, ALFRED P.—Discussion by,
25, 30, 32, 35, 73.—On Committee,
25, 29.
BOUSCAREN, G.—Report by, 18.
BOWDITCH, E. W.—Report by, 18.
BRADLEY, T. C.—Admitted as Mem-
ber, 61.
Bridge Floors: An Economical and
Efficient Railroad Bridge Floor,
by W. HOWARD WHITE, 136.
Bridge, Rebuilding the Monongahela
Bridge in Pittsburgh, Pa., by G.
LINDENTHAL, 96.
Bridge, Suggestions as to Conditions
proper to be required in High-
way Bridge Construction, by J.
A. L. WADDELL, 85.
Bridge Truss, Combined Triangular
and Suspension, by EDWIN
THACHER, 153.
BRIGGS, ROSWELL E.—Contributes to
Building Fund, 119.
BRINCKERHOFF, HENRY W.—Admitted
as Member, 153, 156.
BROOKS, THOMAS B.—Resignation of,
156.
BROUGH, REDMOND J.—Death an-
nounced, 136, 148.
BROWN, ARTHUR.—Contributes to
Building Fund, 81.
BUCK, L. L.—Discussion by, 72.
Building Fund, 61, 81, 119.
CAMPBELL, CHARLES E. H.—Admitted
as Member, 145, 149.
Canal, Hydraulic, by CHARLES C.
SMITH, 154.
Canal, Panama Ship, 86.
Canal, The Shubenacadie, by E. H.
KEATING, 154.
CARD, JOSEPH P.—Admitted as Asso-
ciate, 136, 145.

CARD.

CARD, WILLIAM WARREN.—Admitted as Member, 135, 145.
 CARTWRIGHT, ROBERT.—Discussion by, 151.
 CARY, EDGAR S.—Death announced, 40, 62.
 Cements, Uniform System for Tests of, 1, 108.
 CHANUTE, O.—Discussion by, 40, 59, 67, 80, 86, 108.—Makes report, 18.
 Chicago, Visit to, 104.
 CHRISTIE, JAMES.—Paper by, 151.
 CISNEROS, F. J.—Discussion by, 86.—Presents samples of foreign woods, 153.
 CLARKE, THOMAS C.—Discussion by, 60, 67, 73, 80.—On Committee, 67.—Report by, 107.
 CLARK, JACOB M.—Discussion by, 60. Paper by, 59.
 COLBY, CHARLES L.—Admitted as Fellow, 136, 146.
 COLLINGWOOD, F.—Censor to award Norman Medal, 154.—Discussion by, 18, 25, 95, 96.
 Committee on Finance, 1, 55, 60.
 —on Library, 60.
 —on Nominations, 108, 154.
 —on Preservation of Timber, 18, 108.
 —on Uniform Standard Time, 1, 108, 154.
 —on Uniform System for Tests of Cement, 1, 108.
 Compounding Dues. (See Dues.)
 COMPTON, ALFRED G.—Discussion by, 60.
 CONNETT, ALBERT NEUMAN.—Admitted as Junior, 106, 119.
 CONRO, ALBERT.—Admitted as Fellow, 136, 146.
 Constitution, Amendments adopted, 63.—Proposed, 6, 14, 15, 18, 29, 63, 64, 65.
 Convention, Annual, 5, 44, 79, 81, 91. (See Minutes.)
 COOPER, PETER.—Death announced, 79.
 COOPER, THEODORE.—Discussion by, 9, 23, 33, 34, 40, 59, 67, 77, 85, 86, 108, 136, 151, 155.—On Committee, 26, 67.—Report by, 107.
 CORNELL, O. H. P.—Admitted as Member, 79, 119.
 CORYELL, MARTIN.—Discussion by, 40.
 COURTWRIGHT, MILTON.—Death announced, 85, 90.
 Cranes as Labor-Saving Machines, by CHARLES J. APFLEBY, 151.

CROES.

CROES, J. JAMES R.—Address by, 106.
 —Discussion by, 8, 14, 15, 18, 60, 67, 80, 95.—Elected Treasurer, 5.
 —On Committee, 60.—Presides at Meeting, 108.—Report by, 53.
 Current-Meter, by F. P. STEARNS, 96.
 DAVIS, JOSEPH P.—Discussion by, 9, 21, 28, 35, 60, 66, 67.—Elected Director, 5.—Makes report, 55.
 —On Committee, 60.—Presides at meeting, 59.
 Death of Members. (See List.)
 DE GARAY, F.—Elected as Fellow, 136.
 Degrees to be conferred by Technical Institutions, 65, 107.
 Direction, Board of. (See Board.)
 DORAN, FRANK C.—Admitted as Member, 135, 145.
 DOWNE, GEORGE.—Admitted as Member, 135, 145.
 DRAKE, WILLIAM A.—Admitted as Member, 155, 156.
 Dredging Operations at Oakland Harbor, Cal., by L. J. LE CONTE, 155.
 DRESSER, GEORGE WARREN.—Death announced, 106, 148.
 Dues, Arrears of, 60, 80, 154.—Compounding, 6, 45, 60, 64.
 EDWARDS, N. M.—Discussion by, 96.
 EGGLESTON, THOMAS.—Discussion by, 24, 28, 35, 95, 96, 110.—Paper by, 95.—Report by, 2.
 Election of Members. (See Ballots.)
 Election of Officers, 5.
 ELLIOTT, GEORGE H.—Admitted as Member, 79, 83.
 ELLIS, THEODORE G.—Death announced, 40, 62.
 ELY, THEODORE N.—Report by, 2.
 EMERY, CHARLES E.—Discussion by, 35, 40, 59, 60, 66, 67, 77, 80, 86, 95, 108, 136, 151.—Paper by, 95.
 Falls of St. Anthony, The Preservation of, by F. U. FARQUHAR, 95.
 Falls of St. Anthony, The Water Power of, by JOSEPH P. FRIZELL, 96.
 FARNAM, HENRY.—Death announced, 153, 156.
 FARQUHAR, FRANCIS U.—Death announced, 120, 136.—Paper by, 95.
 Fellowship Fund, 46, 54.
 FILLEY, HIEL HAMILTON.—Admitted as Member, 59, 61.
 FISHER, CHARLES H.—Discussion by 40, 59.—On Committee, 26.

FLAD.

- FLAD, HENRY.—Elected Vice-President, 5.
 FLEMING, SANDFORD.—Report by, 2, 108.
 Flow of Water in Pipes, by HAMILTON SMITH, JR., 67.
 Flow of Water of Sudbury River, Experiments on the, by A. FTELEY and F. P. STEARNS, 5.
 FORCE, C. G.—Discussion by, 95.
 FORNEY, M. N.—Discussion by, 40, 59, 80, 86, 151.
 FOWLER, CHARLES E.—Death announced, 59, 62.
 FOX, CHARLES DOUGLAS.—Discussion by, 136.
 FRANCIS, GEORGE B.—Admitted as Junior, 136, 146.
 FRANCIS, JAMES B.—Discussion by, 95, 96.
 Freight, How can Railways be made more Efficient for the Transportation of, by WILLIAM P. SHINN, 103.
 Freight, Increased Efficiency of Railways for the Transportation of, by WILLIAM P. SHINN, 29, 86, 108, 136.
 FRITH, ARTHUR J.—Admitted as Member, 59, 61.
 FRIZELL, JOSEPH PALMER.—Admitted as Member, 59, 61.—Discussion by, 95, 96.—Paper by, 96.
 FTELEY, A.—Norman Medal Awarded to, 5.—On Committee, 108.
 FULLER, FRANK L.—Admitted as Junior, 79, 146.
 Fund, Building, 61.
 —Fellowship, 46, 54.
 —General, 55.
 GATES, CHRISTOPHER L.—Transferred to Member, 135, 156.
 GATES, HORACE DELPHOS.—Admitted as Member, 63, 83.
 Geodetic Field Work, by GEORGE Y. WISNER, 80.
 GLASKIN, EDWIN E.—Discussion by, 155.
 GOODWIN, JOHN M.—Presents specimens of native woods, 153.
 GREENE, GEORGE S.—Censor to award Norman Medal, 5.—Discussion by, 9, 14, 15, 21, 30.
 GREENE, GEORGE S., JR.—Address by, 92.—Chairman at Convention, 92.—Discussion by, 80, 151, 155.—Elected Director, 5.—Makes report, 55.—On Committee, 60.—Presides at Meeting, 79, 149, 154.

GRISWOLD.

- GRISWOLD, FRANK L.—Admitted as Member, 85.
 GROVE, ORVILLE.—Admitted as Member, 79.
 GUDE, ALBERT V.—Resignation of, 156.
 HAIGHT, S. S.—Contributes to Building Fund, 61.—Discussion by, 6, 15, 20, 80, 85.
 HAMILTON, WILLIAM G.—Discussion by, 86, 108, 151.—Elected Director, 5.—On Committee, 60.—Presides at Meeting, 151.
 HARRIS, ROBERT L.—Discussion by, 40, 79, 151.—Remarks by, 149.
 HARROD, B. M.—Report by, 18.
 HASKINS, WILLIAM JEWETT.—Admitted as Junior, 63, 83.
 HATCH, CHARLES F.—Presides at Convention, 98.
 HERMANY, CHARLES.—Discussion by, 95.—On Committee, 108.
 HILGARD, J. E.—Discussion by, 154.—Report by, 2.
 HINCKLEY, HOWARD VERNON.—Admitted as Member, 155, 156.
 HOLLOWAY, J. F.—Discussion by, 95.
 House of the Society, 45.
 HUBBARD, Gov.—Address by, 92.
 HUMPHREYS, ANDREW A.—Death announced, 156.
 HUNT, RANDELL.—Admitted as Member, 85, 89.
 HUTTON, WILLIAM R.—Censor to award Norman Medal, 154.
 Iron, Strength of Wrought-Iron Struts, by JAMES CHRISTIE, 151.
 JAMES, JOHN COLLINSON.—Death announced, 80, 84.
 JENNINGS, WILLIAM HENRY.—Admitted as Member, 135, 145.
 JERVIS, JOHN B.—Discussion by, 29.
 KEATING, EDWARD H.—Paper by, 154.
 KENDRICK, JOHN WILLIAM.—Admitted as Member, 106, 119.
 KENNEDY, JOHN.—Censor to award Norman Medal, 5.
 KIMBALL, FRANCIS W.—Admitted as Member, 85, 156.
 KNAF, JOSEPH M.—Discussion by, 136.
 KNEASS, STRICKLAND.—Resignation of, 156.
 LAWLER, JOHN.—Admitted as Fellow, 89, 136.—Paper by, 95.

LE BARON.

- LE BARON, J. FRAS.—Presents specimen of preserved timber, 86.
 LE CONTE, LOUIS J.—Paper by, 155.
 LEDERLE, GEORGE A.—Admitted as Junior, 85, 89.
 LEHLBACH, GUSTAV.—Admitted as Member, 63, 83.
 Library.—Additions to, 113, 129.—Publications and Papers received for, 56.—State of, 51.
 Life Membership, 6, 45, 60, 64.
 LINCOLN, WILLIAM S.—Admitted as Member, 155, 156.
 LINDENTHAL, GUSTAV.—Paper by, 96.
 List of Members—Additions to, 61, 83, 89, 119, 145, 156.
 —Changes and Corrections of Address, 61, 83, 89, 120, 146.
 —Deaths, 84, 90, 120, 148, 156.
 —Resignations, 156.
 LOCKWOOD, JOHN.—Discussion by, 10.
 LOWETH, CHARLES FREDERICK.—Admitted as Junior, 59, 61.
 MACDONALD, CHARLES.—Discussion by, 39, 73, 85.—Offers Resolution, 79.—On Committee, 26.
 MAIS, HENRY COATHUPE.—Admitted as Member, 106.
 MAN, ALBON PLATT, JR.—Admitted as Member, 135, 145.
 MANSFIELD, M. WILLIAM.—Admitted as Member, 61.
 MARR, GEORGE A.—Admitted as Member, 145, 149.
 MARTIN, CHARLES C.—On Committee, 108.
 MCCOOL, DANIEL.—Admitted as Member, 135, 145.
 McDONALD, HUNTER.—Admitted as Junior, 79, 83.
 MCGRATH, WALLACE.—Admitted as Member, 135, 145.
 McMATH, ROBERT E.—Discussion by, 19.
 Meetings.—Of the Board of Direction. (See Minutes.)
 —Of the Society. (See Minutes.)
 MEIER, EDWARD D.—Discussion by, 95.
 Members.—Additions to. (See List.)
 —Ballots for. (See Ballots.)
 —Changes of Address. (See List.)
 —Deaths. (See List.)
 —Resignations. (See List.)
 Membership.—Statement of, 44, 49.
 —Life, 6, 45, 60, 64.
 Memoirs of Deceased Members, 121, 137.—WILLIAM RAYMOND MORLEY, 121.—ASHBEL WELCH, 137.

MENDELL.

- MENDELL, GEORGE H.—Report by, 18.
 MERRILL, WILLIAM E.—Censor to award Norman Medal, 5.—Elected Director, 5.—On Committee, 60.
 METCALF, WILLIAM.—Address by, 98.—Elected Director, 5.
 Metrological Investigations, by O. E. MICHAELIS, 96.
 MICHAELIS, O. E.—Discussion by, 26, 38.—Paper by, 96.—Report by, 111.
 Minneapolis, Convention at, 97.
 Minnetonka, Lake, 105.
 Minutes of Annual Convention at St. Paul and Minneapolis, Minn., June 19, 20, 21, 22, 1883.—Called to order by JOHN BOGART, Secretary of the Society, 10 A. M., June 19, in the Capitol at St. Paul, 91; Director GEORGE S. GREENE, JR., called to the chair; address by J. W. BISHOP, Chairman of Local Committee; address by Governor HUBBARD; address by GEORGE S. GREENE, JR., 92; address by Mayor O'BRIEN, 93; Election of D. C. SHEPARD as permanent Chairman; address by D. C. SHEPARD, 94; "Preservation of the Falls of St. Anthony," by F. U. FARQUHAR, read and discussed; "Cost of Steam Power," by CHARLES E. EMERY, read, 95.—Second Session, St. Paul, June 20, 10:30 A. M.: "Cost of Steam Power" discussed; "Preservation of the Falls of St. Anthony" discussed; "An Accident to Steam Pipes arising from the use of Blast Furnace Wool," by T. EGGLESTON, read and discussed; "Railway Pontoon Bridge," by JOHN LAWLER, read and discussed, 96; "Rebuilding the Monongahela Bridge at Pittsburgh," by G. LINDENTHAL, read and discussed, 96.—Third Session, St. Paul, June 21, 10:30 A. M.: "The Water Power of the Falls of St. Anthony," by JOSEPH P. FRIZZELL, read and discussed; "The Current-Meter, and why the Maximum Velocity of Water flowing in Open Channels is Below the Surface," by F. P. STEARNS, read and discussed; "Metrological Investigations" by O. E. MICHAELIS, read; "Use of the Nasmyth Pile Driver," by D. J. WHITTEMORE, read and discussed;

MINUTES.

Recess and Business Meeting ; "Railway Track Repairs," by BENJAMIN REECE, read ; "Cause of Decay in Timber," by J. W. PUTNAM, read ; Resolutions of Thanks passed, 96.—Fourth Session, Minneapolis, June 22, 10:30 A. M. : CHARLES F. HATCH, Chairman of Local Committee, in the Chair, 97; address by H. E. RAND, Ex-Mayor; address by WILLIAM METCALF, 98; "How can Railways be made more Efficient for the Transportation of Freight?" by WILLIAM P. SHINN, read ; List of Members in Attendance, 103; Visit to Chicago, 104; Visits to Minnetonka, Fort Snelling, Minnehaha, Lake Calhoun; Excursion on the Mississippi and St. Croix to Stillwater, 105.

Minutes of Meetings of the Board of Direction, 60, 80, 112, 136, 154, 155.

- January 2, 1883, Proposals considered ; appropriations made ; arrangements for Annual Meeting made, 60.
- January 15, 1883, Proposals considered ; appropriations made ; Annual Report adopted, 60.
- January 20, 1883, Standing Committees appointed ; Proposals considered ; action taken as to Tests of Materials ; as to Ballots for Amendments to the Constitution, 60.
- February 14, 1883, Proposals considered ; action taken as to Arrears of Dues ; as to Norman Medal ; as to Tests of Structural Materials ; as to Rowland Prize ; Resolutions received as to death of ASHBEL WELCH ; appropriations made, 60.
- March 7, 1883, Proposals considered ; Financial business transacted, 80.
- March 14, 1883, action taken as to award of Norman Medal ; Rules for award of Rowland Prize adopted ; Members dropped on account of Arrears of Dues ; Appropriations made, 80.
- April 4, 1883, Proposals considered ; arrangements for Convention made, 81.
- April 11, 1883, General business transacted, 81.
- April 13, 1883, Arrangements for Convention considered, 81.
- April 18, 1883, Arrangements for Convention considered ; appropriations made, 81.
- May 2, 1883, Proposals considered ; Financial business transacted, 112.
- May 9, 1883, Proposals considered, 112.
- June 6, 1883, Proposals considered ; arrangements made for Convention ; order made that no meetings of the Society be held during July and August, 112.
- June 16, 1883, Convention arrangements made, 112.
- August 8, 1883, Proposals considered ; action taken as to Arrears of Dues ; appropriations made, 136.
- September 5, 1883, Proposals considered ; action taken as to Library, 136.
- October 3, 1883, Proposals considered ; action taken as to Arrears of Dues ; Society of Mechanical Engineers invited to hold meeting in Society House, 136.
- October 31, 1883, Proposals considered ; Censors to award Norman Medal and Committee to award Rowland Prize appointed ; Report of Nominating Committee received, 154.
- November 7, 1883, Proposals considered ; Names of Engineers selected at request of Councils of Philadelphia ; action taken as to Membership ceasing on account of Arrears of Dues, 154.
- December 5, 1883, Proposals considered ; arrangements made for Annual Meeting and for preparation of Annual Reports, 155.

Minutes of Meetings of the Society, 1, 59, 63, 67, 79, 80, 85, 86, 91, 106, 108, 135, 136, 149, 151, 153, 154, 155.

- January 3, 1883, Ballots canvassed ; "Railroad Economics as a Pseudo-Science," by WILLIAM P. SHINN, read and discussed, 59.
- January 17, 1883. The Annual Meeting: Vice-President WILLIAM P. PAINE in the chair; Annual Reports of Board of Direction, of Treasurer, of Finance Committee;

MINUTES.

- Committee on Uniform System for Tests of Cements continued; Report of Committee on Standard Time read, accepted, and committee continued and resolutions on the subject adopted, 1; Officers of the Society elected; Report of Censors to award Norman Medal; the medal awarded to paper by A. FTELEY and F. P. STEARNS; Determination of Minneapolis and St. Paul for next Annual Convention, 5; Amendment to Constitution providing for Compounding of Dues discussed, amended and recommended for adoption, 6; Amendment to Constitution in reference to method for amending discussed and recommended for adoption, 14; Amendment to Constitution providing for formation of Sections discussed, 15; Recess for Lunch; Session resumed; Report of Committee on Preservation of Timber read, accepted and Committee continued; Discussion on Amendment to Constitution providing for formation of Sections resumed, 18; Amendment referred to a Committee; Subject of Tests of Structural Materials discussed, 26; Appointment of Committee on that subject referred to Board of Direction; Paper on "Increased Efficiency of Railways for the Transportation of Freight," by WILLIAM P. SHINN, discussed; Committee reported Amendment of Constitution providing for formation of Sections, 29; Amendment discussed and recommended for adoption, 30; Paper on "Increased Efficiency of Railways for the Transportation of Freight" discussed; Recess; Discussion resumed at 8 P. M.; Deaths of EDGAR S. CARY, of THEODORE G. ELLIS, and of WILLIAM R. MORLEY announced; List of Members in Attendance, 40; Programme of Meeting and Excursions, 41.
- February 7, 1883, Death of CHARLES E. FOWLER announced; Tests of Structural Materials discussed, 59.
 - February 21, 1883, "Weights and Measures," by JACOB M. CLARK, read and discussed, 59.

MINUTES.

- March 7, 1883, Ballots for Membership canvassed; Ballots for proposed Amendments to Constitution canvassed; the Amendment in reference to method of amending the Constitution adopted; the Amendments providing for Compounding Dues not adopted; the Amendments providing for formation of Sections not adopted, 63; Subject of Degree to be conferred by Technical Institutions discussed and referred to Committee, 65; "The Flow of Water in Pipes," by HAMILTON SMITH, Jr., read and discussed, 67.
- March 21, 1883, Death of JAMES O. MORSE announced; Tests of Structural Materials discussed, 67.
- April 4, 1883, Ballots for Membership canvassed; Death of PETER COOPER announced; "Geodetic Field Work," by G. Y. WISNER, read and discussed, 79.
- April 18, 1883, Deaths of JOHN COLLINSON JAMES and of SIMEON SHELDON announced; "Proper Compensation for Railway Curves on Grades," by WILLIAM R. MORLEY, read and discussed, 80.
- May 2, 1883, Ballots for Membership canvassed; Death of MILTON COURTWRIGHT announced; "Suggestions as to the Conditions proper to be required in Highway Bridge Construction," by J. A. L. WADDELL, read and discussed, 85.
- May 16, 1883, "Increased Efficiency of Railways for the Transportation of Freight" discussed; Progress of Panama Ship Canal discussed, 86.
- June 6, 1883, Ballots for Membership canvassed; Death of GEORGE W. DRESSER announced; Report presented of Committee in reference to Engineering Degrees; "Increased Efficiency of Railways for the Transportation of Freight" discussed, 106.
- June 21, 1883, Business Meeting at Annual Convention; Appointment of Nominating Committee; Report of Committee on Uniform System for Tests of Cements, and Committee continued; Report of Committee on Preservation of Timber, and Committee continued; Report of Committee on

MINUTES.

- Uniform Standard Time, 108; Report discussed and Committee continued; Report of Committee on Aid for carrying on Tests of Structural Materials, 111.
- September 5, 1883, Ballots for Membership canvassed; Election of Fellows announced; Deaths announced of FRANCIS U. FARQUHAR, and of REDMOND J. BROUGH; Vibration, or the Effect of Passing Trains on Iron Bridges, Masonry and other Structures," by JAMES L. RANDOLPH, read and discussed, 135.
 - September 19, 1883, Death of JOHN C. TRAUTWINE announced; "Increased Efficiency of Railways for the Transportation of Freight" discussed; "On an Economical and Efficient Railroad Bridge Floor," by W. HOWARD WHITE, read and discussed, 136.
 - October 3, 1883, Ballots for Membership canvassed; Deaths announced of GEORGE D. ANSLEY and of S. S. MONTAGUE; "Experiments on the Strength of Wrought-Iron Struts," by JAMES CHRISTIE, read and discussed, 149.
 - October 17, 1883, "Cranes as Labor-Saving Machines," by CHARLES J. APPLEBY, read and discussed, 151.
 - November 7, 1883, Ballots for Membership canvassed; Deaths announced of THOMAS J. SEELY and of HENRY FARNAM; "Description of a Combined Triangular and Suspension Bridge Truss," by EDWIN THACHER, read and discussed; Samples of Foreign Woods presented by JAMES D. SCHUYLER and by F. J. CISNEROS, and of Native Woods by J. M. GOODWIN, 153.
 - November 21, 1883, "The Shubenacadie Canal," by EDWARD H. KEATING, read and discussed; a Hydraulic Canal, built in very cold weather, described by CHARLES C. SMITH; Standard Time discussed, 154.
 - December 5, 1883, Ballots for Membership canvassed; Deaths announced of ARTHUR SPIELMANN and of HOWARD SCHUYLER, "Dredging Operations at Oakland Harbor, Cal.," by L. J. LE CONTE, read and discussed, 155.

MITCHELL.

- MITCHELL, ALEXANDER.—Admitted as Fellow, 136, 146.
- MONTAGUE, SAMUEL S.—Death announced, 149.
- MOORE, ROBERT.—Nomination for Advisory Board, 154.
- MORISON, GEORGE S.—Discussion by, 59.
- MORLEY, WILLIAM R.—Death announced, 40, 62.—Memoir of, 121.—Paper by, 80.
- MORRIS, CHARLES J. A.—Admitted as Member, 149, 156.
- MORSE, JAMES O.—Death announced, 67, 84.
- MUNROE, HENRY S.—Resignation of, 156.
- Nasmyth Pile Driver, by D. J. WHITTEMORE, 96.
- NEXSEN, ELBERT.—Admitted as Member, 155.
- Nomination of Engineers to serve on Professional Advisory Board, 154.
- Nominations, Committee on, 108, 154.
- Norman Medal.—Award of, 5, 60, 80.—Board of Censors to make award, 154.—Rules for its award, 82, 88, 118, 127, 134.
- NORTH, EDWARD P.—Discussion by, 21, 33, 60, 67, 80.—Nomination for Advisory Board, 154.
- O'BRIEN, MAYOR.—Address by, 93.
- O'HANLY, JOHN L. P.—Admitted as Member, 135, 145.
- PAINE, CHARLES.—Discussion by, 40.—Elected President, 5.—Report by, 2.
- PAINE, WILLIAM H.—Discussion by, 8, 67, 78, 80, 136.—Elected Vice-President, 5.—Makes report, 55.—On Committee, 60.—Presides at Meeting, 1, 59, 63, 67, 80, 85, 86, 106, 135, 136, 153, 155.
- PALMER, FRANCIS I.—Resignation of, 156.
- PAKSON, JOSEPH S.—Discussion by, 40.
- PEGRAM, GEORGE HERNDON.—Transferred to Member, 59, 61.
- Periodicals in Library, 56.
- PETERSON, P. A.—Censor to award Norman Medal, 154.—Discussion by, 95.
- Pipes, Flow of Water in. (See Flow.)
- POETSCH, CHARLES J.—Transferred to Member, 85, 89.

POLK.

- POLK, GEORGE W.—Admitted as Member, 136, 145.
 Pontoon, Railway Pontoon Bridge, by JOHN LAWLER, 95.
 Preservation of Timber. (See Committee.)
 PRINDLE, FRANKLIN C.—Discussion by, 80, 155.
 Publications and Papers received at Library, 56.
 PUTNAM, JOSEPH W.—Paper by, 96.—Report by, 18.
 Railroad Bridge Floors, by W. HOWARD WHITE, 136.
 Railroad Economics as a Pseudo-Science, by WILLIAM P. SHINN, 59.
 Railways, How can Railways be made more Efficient for the Transportation of Freight, by WILLIAM P. SHINN, 103.
 Railways, Increased Efficiency of Railways for the Transportation of Freight, by WILLIAM P. SHINN, 29, 86, 108, 136.
 Railway Track Repairs, by BENJAMIN REECE, 96.
 RAND, H. E.—Address by, 98.
 RANDOLPH, JAMES L.—Paper by, 136.
 REECE, BENJAMIN.—Paper by, 96.
 Report of Board of Direction, 1, 43, 60.
 — of Finance Committee, 1, 55.
 — of Treasurer, 1, 53.
 Reports of Committee. (See Committees.)
 Resignation of Members. (See List.)
 RICH, WATSON W.—Admitted as Member, 136, 145.
 ROBERTS, POULTER BENJAMIN.—Admitted as Member, 155.
 ROGERS, ALBERT BRAINERD.—Admitted as Member, 106, 119.
 ROSEWATER, ANDREW.—Admitted as Member, 145, 149.
 Rowland Prize, 60, 80.—Committee to make Award, 154.—Rules for Its Award, 80, 81, 87, 117, 128, 133.
 RUNDLETT, LEONARD W.—Admitted as Member, 136, 145.
 Saint Paul, Convention at, 91.
 SANDERSON, J. GARDNER.—Discussion by, 40.
 SCHUYLER, HOWARD.—Death announced, 155, 156.
 SCHUYLER, JAMES D.—Presents Specimens of Mexican Woods, 153.

SCOTT.

- SCOTT, ARTHUR H.—Admitted as Member, 85, 89.
 SEARS, CLINTON B.—Presents Illustrations of Hydraulic Graders, 86.
 Sections of Society Members, Proposed Formation of, 15, 18, 29, 65.
 SEELY, THOMAS J.—Death announced, 153, 156.
 SHELDON, SIMEON.—Death announced, 80, 84.
 SHEPARD, DAVID C.—Address by, 94.—Admitted as Member, 85, 89.—Chairman of Convention, 94.—On Committee, 108.
 SHINN, WILLIAM P.—Discussion by, 9, 20, 30, 36, 40, 59, 66, 86, 96, 108.—On Committee, 67.—Paper by, 59, 103.—Report by, 107.—Resolution by, 96.
 Shubenacadie Canal, by E. H. KEATING, 154.
 SLATAPER, F.—On Committee, 108.
 SMITH, CHARLES C.—Paper by, 154.
 SMITH, C. SHALER.—Report by, 18.
 SMITH, HAMILTON, JR.—Paper by, 67.
 SMITH, JARED A.—Admitted as Member, 85, 89.
 SMITH, LUCIUS A.—On Committee to award Rowland Prize, 154.
 Society Meetings. (See Minutes.)
 SPIELMANN, ARTHUR.—Death announced, 155, 156.
 STAATS, JOHN H.—Discussion by, 155.
 Standard Time. (See Committee.)
 Steam Pipes, an Accident arising from the Use of Blast Furnace Wool, by T. EGGLESTON, 95.
 Steam Power, Cost of, by CHARLES E. EMERY, 95.
 STEARNS, F. P.—Discussion by, 96.—Norman Medal awarded to, 5.—Paper by, 96.
 STEVENS, FRANK S.—Admitted as Member, 149.
 Stillwater, Minn., Visit to, 106.
 STRIEDINGER, JULIUS H.—Discussion by, 60.
 Structural Materials, Tests of. (See Tests.)
 Struts, Strength of Wrought Iron Struts, by JAMES CHRISTIE, 151.
 SWAIN, GEORGE F.—Admitted as Associate, 136, 146.
 SYMONS, THOMAS W.—Resignation of, 156.
 Tests of Structural Materials, 26, 59, 60, 67, 110.
 THACHER, EDWIN.—Paper by, 153.

TIMBER.

- Timber, Cause of Decay in, by J. W. PUTNAM, 96.
 Timber, Committee on Preservation of. (See Committee.)
 Time, Uniform Standard. (See Committee.)
 TOUCEY, J. M.—Report by, 2.
 TOWNE, HENRY R.—Admitted as Member, 145, 149.
 TRAUTWINE, JOHN C.—Death announced, 136.
 Treasurer, Report of, 1, 53.
 TROTTER, ALFRED W.—Admitted as Junior, 136, 146.
 TULLOCK, ALONZO J.—Admitted as Member, 106, 119.

 Vibration, or the Effect of Passing Trains on Iron Bridges, Masonry and other Structures, by JAMES L. RANDOLPH, 136.
 VINING, E. P.—Discussion by, 40.

 WADDELL, J. A. L.—Paper by, 85.
 WALKER, W. W.—On Committee, 26.
 WARD, CHARLES D.—Discussion by, 80.
 WARD, LEBBEUS B.—Discussion by, 80.
 Water, Flow of. (See Flow.)
 WATKINS, FREDERICK W.—Admitted as Member, 145, 149.
 Weights and Measures, by JACOB M. CLARK, 59.

WELCH.

- WELCH, ASHBEL.—Memoir of, 137.—Resolutions as to Death of, 60.
 WELCH, ASHBEL, JR.—Resignation of, 156.
 WELLS, DAVID L.—Admitted as Fellow, 119, 136.
 WHEELER, EBENEZER S.—Admitted as Member, 153, 156.
 WHINERY, S.—Contributes to Building Fund, 61.
 WHITE, GEORGE H.—Admitted as Member, 85, 89.
 WHITE, W. HOWARD.—Paper by, 136.
 WHITTEMORE, DON J.—Discussion by, 96.—Paper by, 96.—Report by, 108.
 WILLIAMS, E. H.—Admitted as Member, 136, 145.
 WILLIAMSON, W. GARNETT.—Admitted as Member, 79, 83.
 WILLSON, FREDERICK N.—Admitted as Junior, 136, 146.
 WILSON, HERBERT M.—Admitted as Junior, 136, 156.
 WISNER, GEORGE Y.—Paper by, 80.
 WOOD, DE VOLSON.—Discussion by, 32, 34.—On Committee to Award Rowland Prize, 154.
 WORTHEN, WILLIAM E.—Discussion by, 155.
 WROTNOWSKI, A. F.—Contributes to Building Fund, 119.
 YATES, PRESTON KING.—Admitted as Junior, 106, 119.